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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,955

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EXAMINER

DO, CHAT C

ART UNIT

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2193

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12/17/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/573,955	Applicant(s) HUANG ET AL.	
	Examiner Chat C. Do	Art Unit 2193	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This communication is responsive to Amendment filed 10/09/2009.
2. Claims 1-13 are pending in this application. Claims 1 and 7-11 are independent claims.

This Office Action is made non-final after a RCE filed 10/09/2009.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. Claims 1-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 1-13 cite a process, device, and medium for transforming data in accordance with a mathematical algorithm. However, claims 1-13 merely disclose series steps/components for transforming data without disclosing a practical/physical application. In addition, method claims 1-6, 8 and 12-13 fail to tie to a specific machine or apparatus for realizing the implementation. In addition, device claims 7 and 9 fail to disclose any specific hardware component to realize the implementation thus they are considered as software per se. The medium claims 10-11 fail to explicitly define the tangible medium neither in specification or remark. Therefore, claims 1-13 are directed to non-statutory subject matter.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ralf et al. (“Audio Coding based on Integer Transform”).

Re claim 1, Ralf et al. disclose in the article a process carried out by a device for determining and outputting a transforming element for a given transformation function for a transformation of a digital signal representing audio, video or an image, which transformation function comprises a transformation matrix and corresponds to a transformation of a digital signal from the time domain into the frequency domain or vice versa (e.g. by DCT transformation expression in page 2 right column wherein transformation would convert the time data domain to frequency data domain), comprising the steps of: decomposing the transformation matrix into a rotation matrix and an auxiliary matrix (e.g. section "The MDCT" in pages 2-3) which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix (e.g. property of the decomposition as by mathematically multiplying the matrix by itself would produce a permutation matrix with integer diagonally whenever $\pi/2$); decomposing the rotation matrix and the auxiliary matrix into a plurality of lifting matrices (e.g. section “The Lifting Scheme” in page 4); determining the transforming

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element comprised of a plurality of lifting stages which correspond to the lifting matrices (e.g. wherein each of the matrix can be decomposed into three Lifting Stages in page 4).

Re claim 2, Ralf et al. further disclose in the article the transformation function is a DCT-I transformation function, DCT-IV transformation function (e.g. section "MDCT by DCT-IV and Givens Rotations" in pages 2-3), DST-I transformation function, DST-IV transformation function, DFT-I transformation function, DFT-IV transformation function, DWT-I transformation function or DWT-IV transformation function.

Re claim 3, Ralf et al. further disclose in the article the lifting matrices are each block-triangular matrices with two invertible integer matrices in one diagonal (e.g. section "The Lifting Scheme" in page 4).

Re claim 4, Ralf et al. further disclose in the article the invertible integer matrices in each lifting matrix are identity matrices or negative identity matrices (e.g. section "The Lifting Scheme" in page 4).

Re claim 5, Ralf et al. further disclose in the article the transforming element comprises five lifting stages (e.g. page 4 wherein the two of the matrix is merged into one).

Re claim 6, Ralf et al. further disclose in the article an audio signal or a video signal is used as the digital signal (e.g. abstract in page 1).

Re claim 7, it is a device claim having similar limitations cited in claim 1. Thus, claim 7 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 8, Ralf et al. disclose in the article a method for transforming a digital signal from the time domain into the frequency domain or vice versa using a transforming element representing audio, video or an image (e.g. by DCT transformation expression in page 2 right column wherein transformation would convert the time data domain to frequency data domain), wherein: the transforming element corresponds to a given transformation function (e.g. section "The Modified DCT" in page 2), which transformation function comprises a transformation matrix wherein the transforming element is determined by a process comprising decomposing the transformation matrix into a rotation matrix and an auxiliary matrix (e.g. section "The MDCT" in pages 2-3) which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix (e.g. property of the decomposition as by mathematically multiplying the matrix by itself would produce a permutation matrix with integer diagonally whenever $\pi/2$) decomposing the rotation matrix and the auxiliary matrix each into a plurality of lifting matrices (e.g. section "The Lifting Scheme" in page 4); determining the transforming element to comprise of a plurality of lifting stages which correspond to the lifting matrices (e.g. wherein each of the matrix can be decomposed into three Lifting Stages in page 4); each lifting stage comprises the processing of sub-blocks of the digital signal by an auxiliary transformation and by a rounding unit (e.g. pages 3-4).

Re claim 9, it is a device claim having similar limitations cited in claim 8. Thus, claim 9 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

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Re claim 10, it is a computer readable medium claim having similar limitations cited in claim 1. Thus, claim 10 is also rejected under the same rationale as cited in the rejection of rejected claim 1.

Re claim 11, it is a computer readable medium claim having similar limitations cited in claim 8. Thus, claim 11 is also rejected under the same rationale as cited in the rejection of rejected claim 8.

Re claim 12, it has similar limitations cited in claim 3. Thus, claim 12 is also rejected under the same rationale as cited in the rejection of rejected claim 3.

Re claim 13, it has similar limitations cited in claim 4. Thus, claim 13 is also rejected under the same rationale as cited in the rejection of rejected claim 4.

Response to Arguments

7. Applicant's arguments filed 10/09/2009 have been fully considered but they are not persuasive.

a. The applicant argues in page 8 for claims rejected under 35 U.S.C. 101 that the claims are amended to apply to transformation of a digital signal representing audio, video or an image and further other claims are directed to devices and computer readable media including several steps/processes. Thus, the claims produce tangible results and fall into one of four the statutory categories.

The examiner respectfully submits that the current claims are still rejected under 35 U.S.C. 101 because the audio, video or an image is just the type of data and further the claims are claiming the mathematical steps of yielding transformation

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matrix which is mathematically generated. The device and computer readable media claims in the preamble would not automatically place the claims into one of four statutory categories, but device claims must disclose specific hardware component to realize the implementation and the medium claims must explicitly define the tangible medium either in specification or remark.

- b. The applicant argues in page 9 that Geiger reference is not prior art under 35 U.S.C. 102(e).

The examiner respectfully submits that Geiger reference is qualified as prior art under 35 U.S.C. 102(b) since it published more than one year prior the effective filing date of the application.

- c. The applicant argues in pages 2-3 for claims that Geiger does not disclose an auxiliary matrix which, when multiplied with itself, equals a permutation matrix multiplied with an integer diagonal matrix since the identity matrix nor the negative matrix do permute.

The examiner respectfully submits that (1) the claims do not disclose specific matrix for each claiming matrix but rather just label them differently as rotation matrix, auxiliary matrix, permutation matrix and integer diagonal matrix. (2) it is known in the art that any matrix can be decomposed into sub-matrices. (3) since neither the definition nor the specific permutation matrix is given in the claims, the examiner can interpret, at least, the permutation matrix is a matrix that would

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invert the space domain which alter the original matrix from the positive space domain to negative space domain.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHAT C. DO whose telephone number is (571)272-3721. The examiner can normally be reached on Tue-Fri 9:00AM to 7:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lewis Bullock can be reached on (571) 272-3759. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Chat C. Do/
Primary Examiner, Art Unit 2193

December 15, 2009